

# **Bald Head Island Settlement Monitoring Surveys**

## **Report 1: March 2005**

### **Introduction**

The first monitoring surveys for the Settlement Agreement between the Village of Bald Head Island and the United States Army Corps of Engineers were taken in March 2005. The criteria to be used in examining the surveys is to be a continuous passage through Smith Island Channel, Baldhead Shoal Channel Reach 1 and Shoal Channel Reach 2 with a minimum bottom width of 500 feet at a depth of -42 feet mean lower low water (mllw).

### **Data**

An after dredging survey, which is a mosaic of after dredging surveys taken over the period 3 December 2004 through 25 January 2005 is displayed in Figure 1 and is labeled January 2005 surveys. Figure 2 is a plot of surveys taken in March 2005, and Figure 3 is a difference plot between the January and March surveys.

A plot for Smith Island Channel of the navigable widths at a depth of -42 feet mllw (navigable depth) is shown in Figure 4. MLLW is 2 inches lower than mean low water (mlw) at Bald Head Island. A plot of the minimum channel cross section at station 10+00 is shown in Figure 5. The baselines for the cross section plots are shown in Figure 1.

A plot for Baldhead Shoal Channel Reach 1 of the navigable widths at a depth of -42 feet mllw is contained in Figure 6. A plot of the minimum cross section in the vicinity of the spit formation at station 16+00 is shown in Figure 7. A plot of the minimum channel cross section at station 32+00 is shown in Figure 8.

A plot for Baldhead Shoal Channel Reach 2 of the navigable widths at a depth of -42 feet mllw is contained in Figure 9. A plot of the minimum channel cross section at station 32+00 is shown in Figure 10.

### **Conclusion**

The minimum navigable width at a depth of -42 feet mllw exceeds 500 feet in all three channels. There has been shoaling at the edge of the channel prism. Some of the shoaling is due to bank sloughing and some is due to the migration of existing shoals.

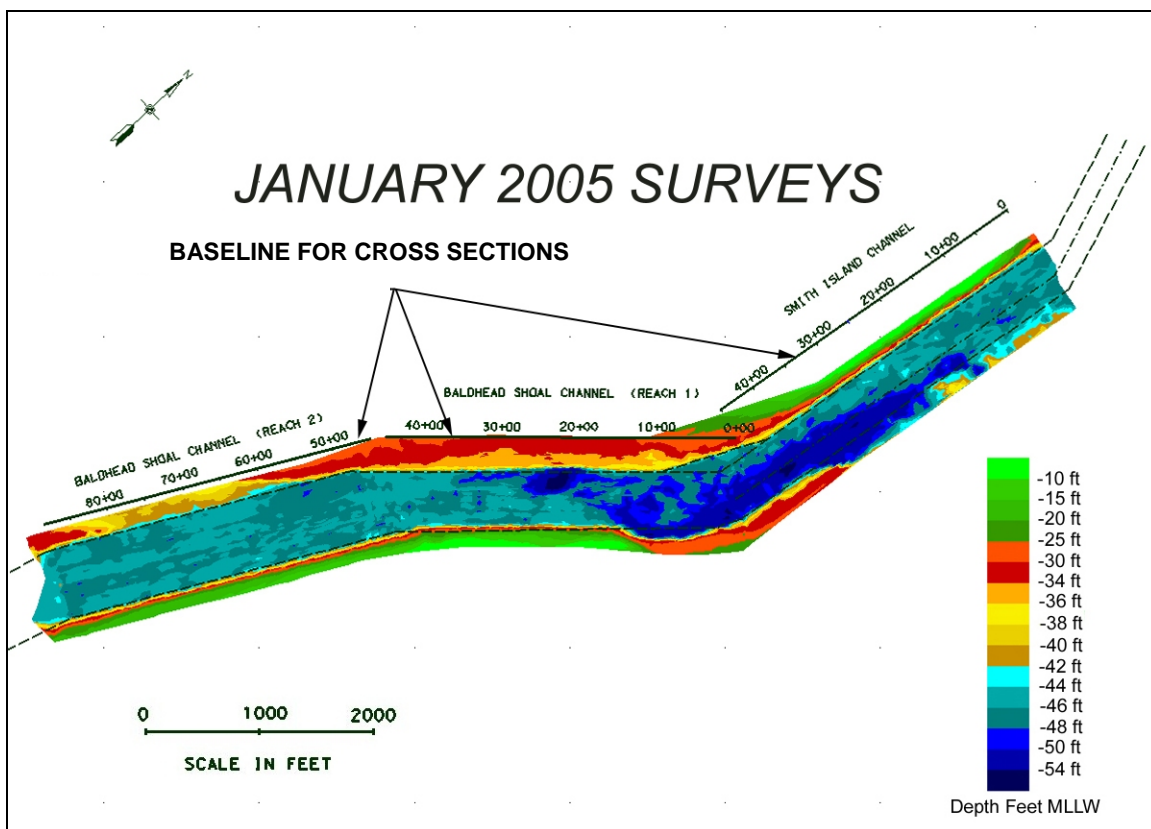


Figure 1 January 2005 Surveys.

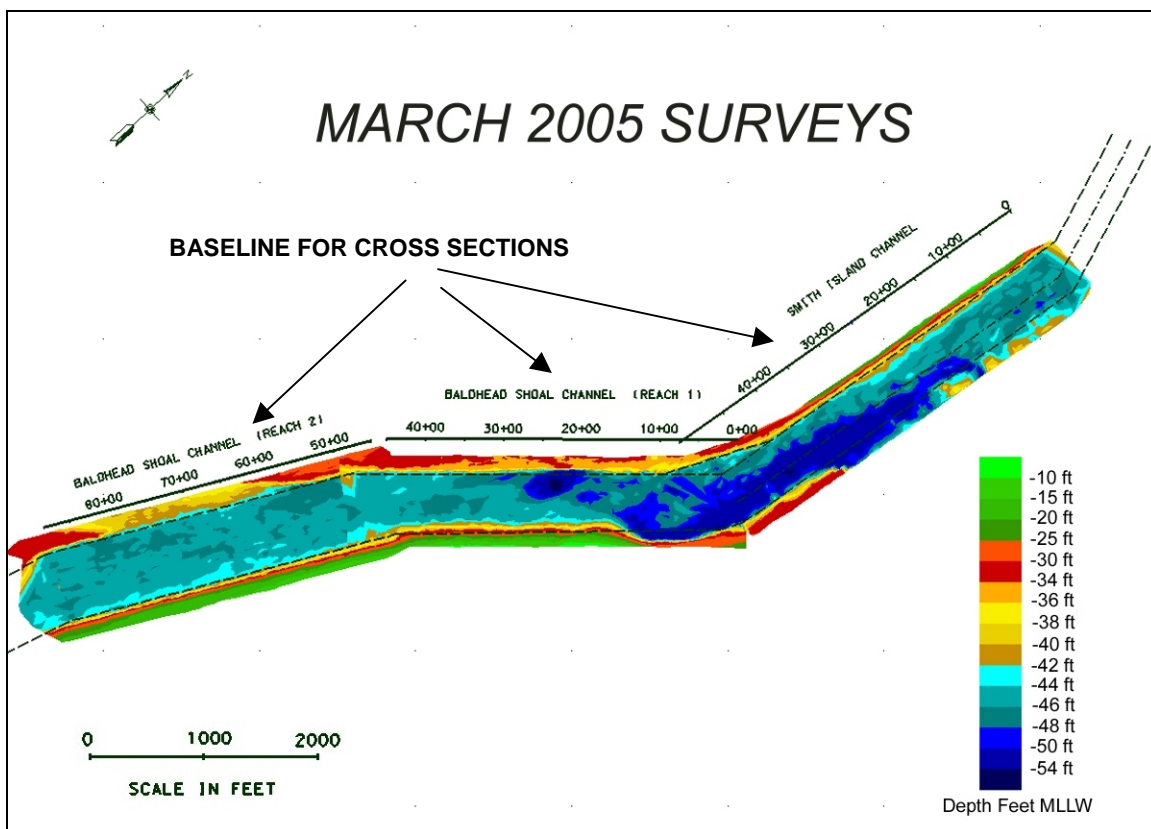


Figure 2 March 2005 Surveys.

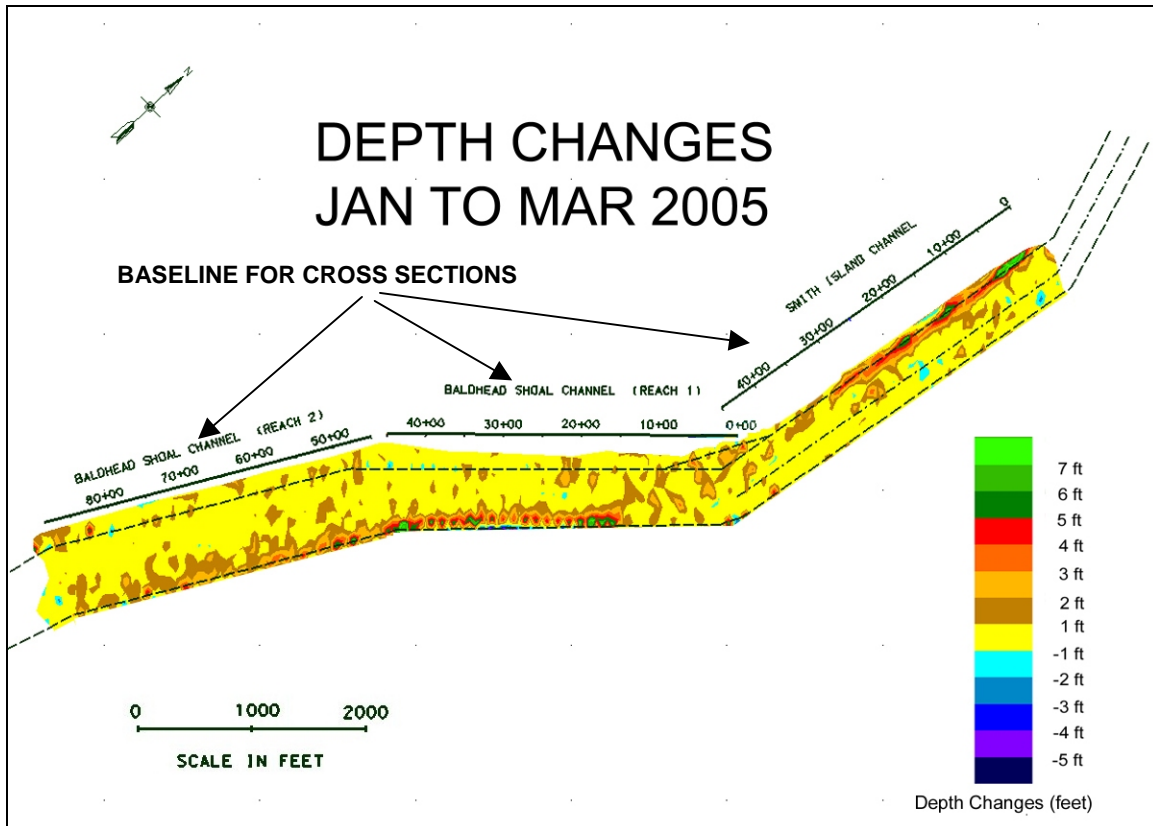


Figure 3 January to March Depth Changes.

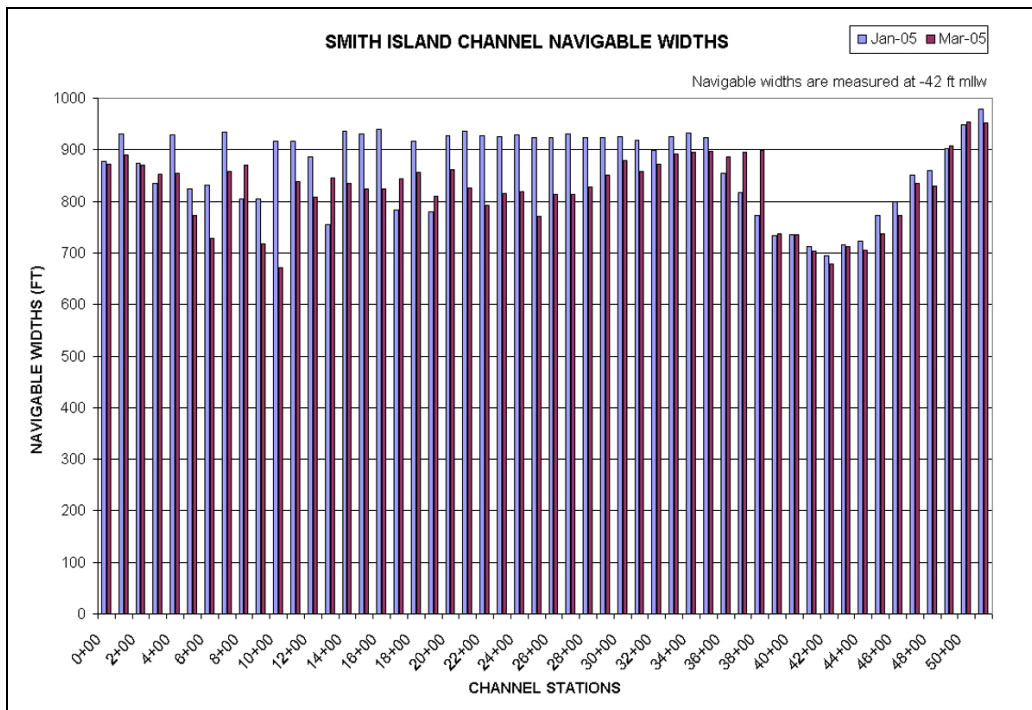
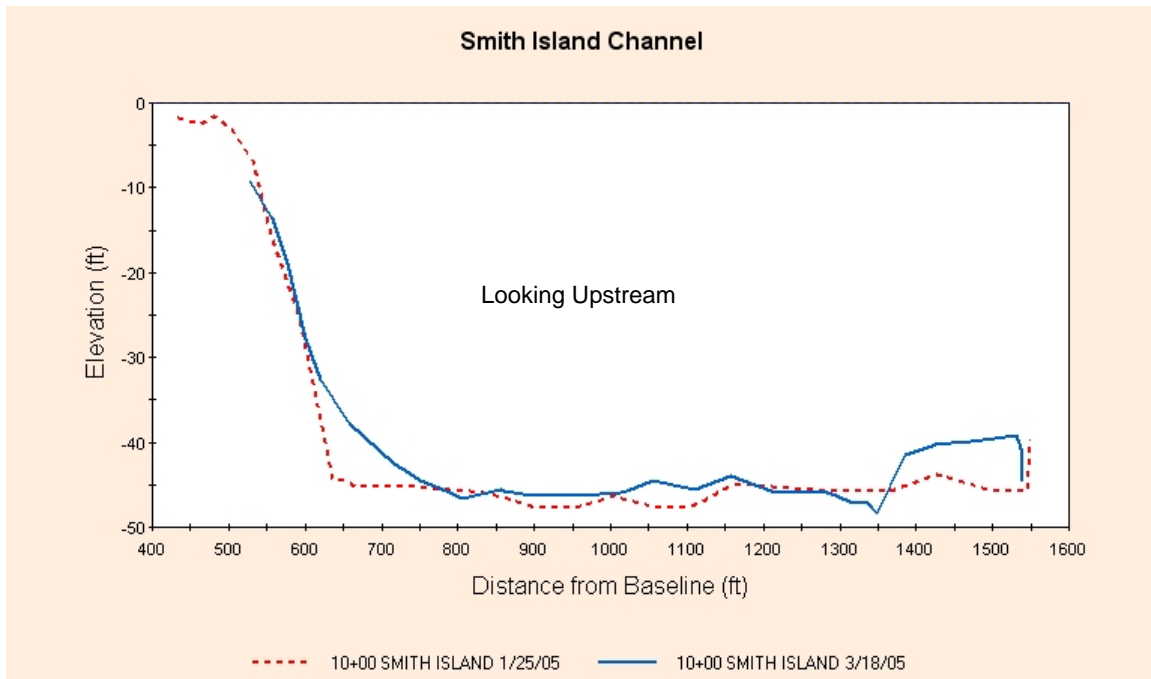
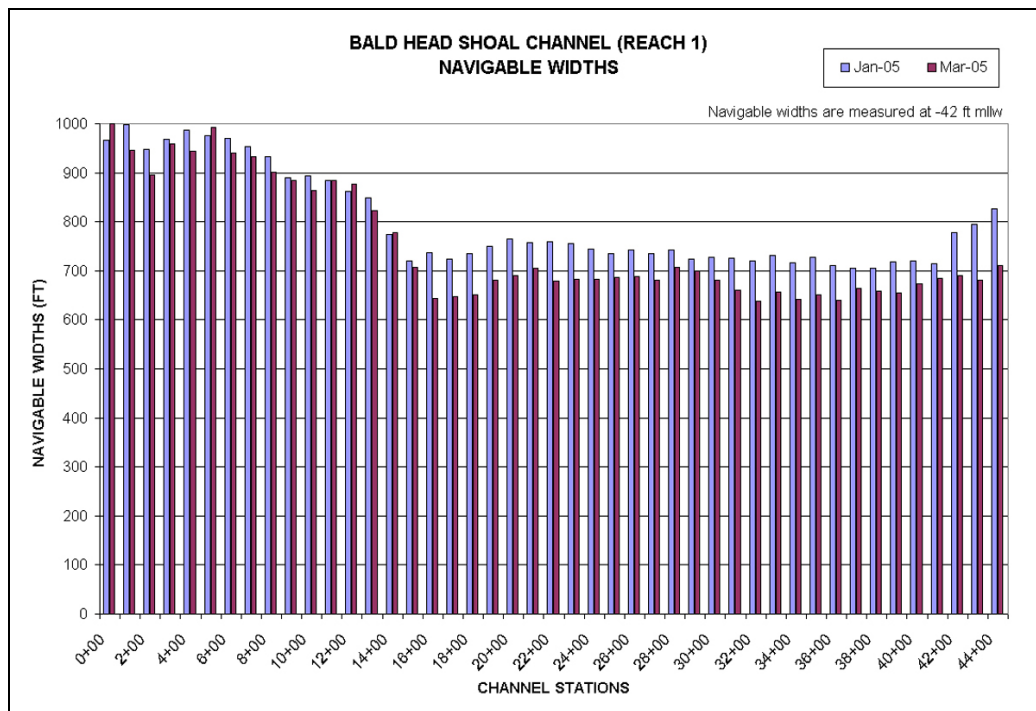


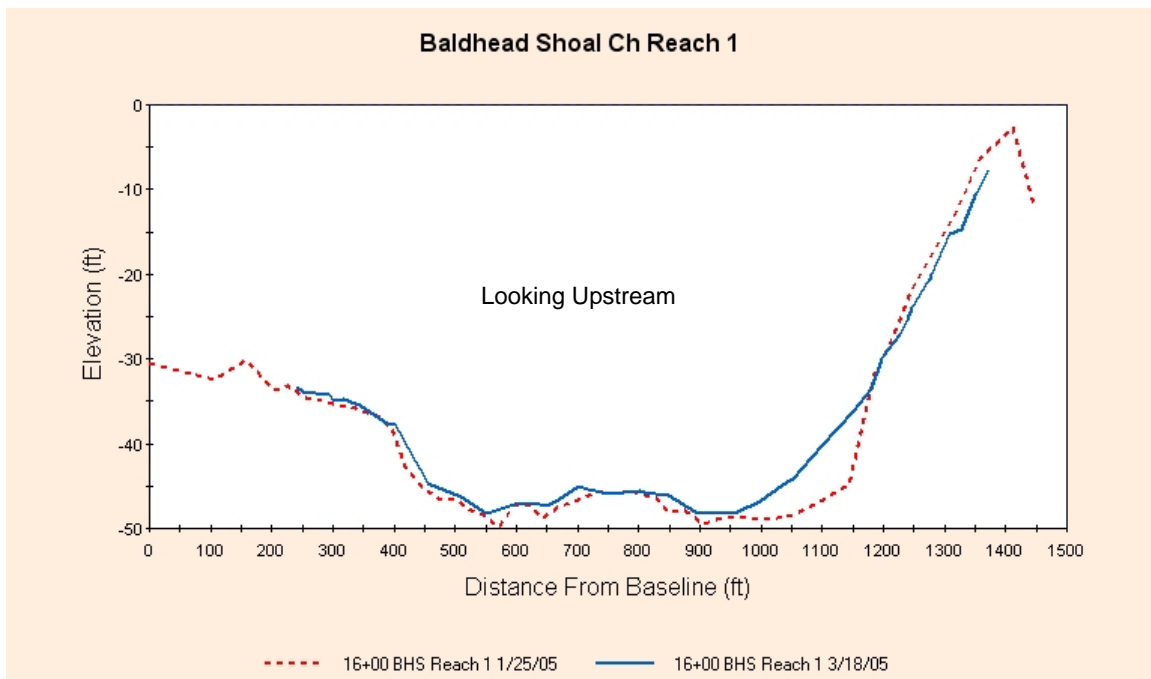
Figure 4 Smith Island Channel Navigable Widths.



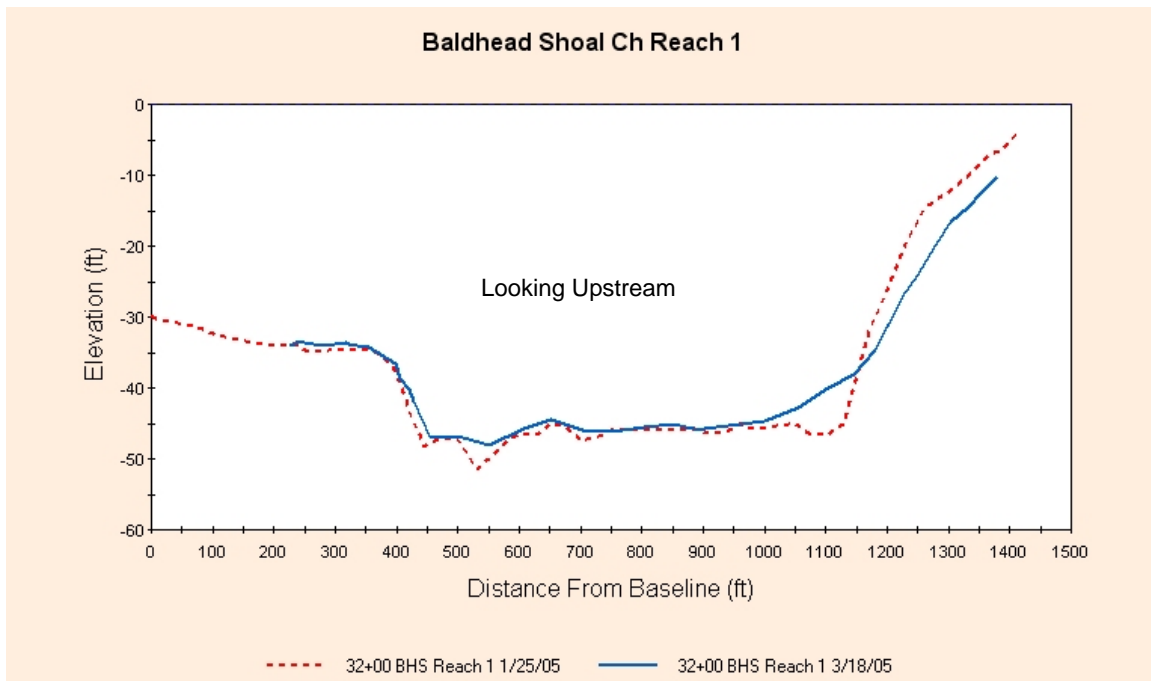
**Figure 5 Smith Island Channel Station 10+00.**



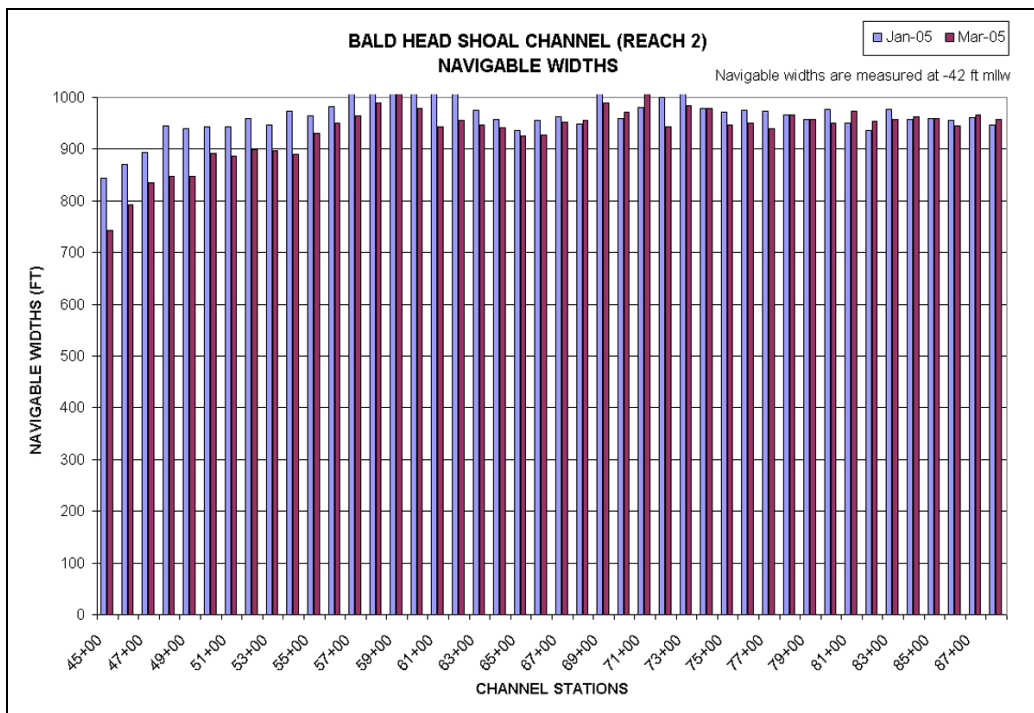
**Figure 6 Baldhead Shoal Reach 1 Navigable Widths.**



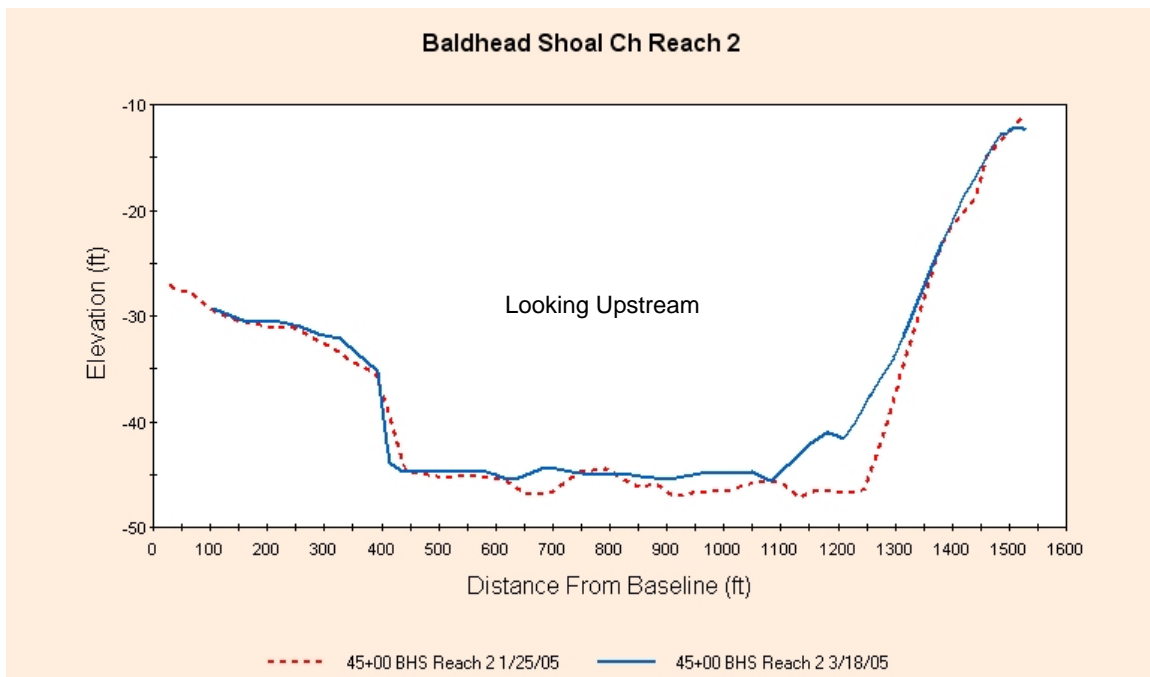
**Figure 7 Baldhead Shoal Station 16+00.**



**Figure 8 Baldhead Shoal Station 32+00.**



**Figure 9 Baldhead Shoal Channel Reach 2 Navigable Widths.**



**Figure 10 Baldhead Shoal Station 45+00.**